IN THE CLAIMS

1. (Currently Amended) A device for use in an imaging system comprising:

a direct conversion detector element configured to convert x-ray photons into electric current, said direct conversion detector element comprising:

a cathode surface;

an anode surface having a plurality of anode side edges; and

a plurality of detector side surfaces connecting said cathode surface to said anode surface, said plurality of detector side surfaces each having a detector depth ;

a pixel array assembly positioned on said anode surface, said pixel array assembly including a plurality of pixel side edges, each of said plurality of pixel side edges immediately adjacent one of said anode side edges;

a guard ring mounted around said plurality of detector side surfaces, said guard ring including an upper ring edge, a lower ring edge, and a ring outer surface including a guard ring height, wherein said ring outer surface is coplanar with said plurality of detector side surfaces.

2. (Original) A device as in claim 1 further comprising:

a voltage source in communication with said guard ring, said voltage source biasing said guard ring with a bias voltage.

3. (Original) A device as in claim 1 wherein said upper ring edge and said lower ring edge are remotely positioned from said cathode surface and said anode surface.

4. (Original) A device as in claim 1 wherein said ring outer surface is coplanar with said pixel side edges.

5. (Cancelled)

6. (Original) A device as in claim 1 wherein said direct conversion detector element comprises amorphous selenium.

7. A device as in claim 1 wherein said pixel array assembly comprises a room temperature semiconductor.

8. (Original) A device as in claim 1 wherein said direct conversion detector element comprises a CdTe detector.

9. (Original) A device as in claim 1 wherein guard ring height is 50% or less of said detector depth.

10. (Original) A device as in claim 1 wherein said upper ring edge and said lower ring edge are positioned closer to said anode surface than said cathode surface.

11. (Original) An imaging system comprising:

an x-ray source;

a detector array comprising a plurality of direct conversion detector elements configured to convert x-ray photons into electric current, each of said plurality of direct conversion detector elements comprising:

a cathode surface;

an anodc surface having a plurality of anode side edges; and

a plurality of detector side surfaces connecting said cathode surface to said anode surface, said plurality of detector side surfaces each having a detector depth ;

a pixel array assembly positioned on said anode surface, said pixel array assembly including a plurality of pixel side edges;

a guard ring mounted around said plurality of detector side surfaces, said guard ring including an upper ring edge, a lower ring edge, and a ring outer surface including a guard ring height, said ring outer surface positioned coplanar with said pixel side edges.

12. (Original) An imaging system as described in claim 11 wherein each of said plurality of pixel side edges is positioned immediately adjacent one of said anode side edges.

13. (Original) An imaging system as in claim 11 further comprising:

a voltage source in communication with said guard ring, said voltage source biasing said guard ring with a bias voltagc.

14. (Original) An imaging system as in claim 11 wherein said upper ring edge and said lower ring edge are remotely positioned from said cathode surface and said anode surface.

15. (Original) An imaging system as in claim 11, wherein said ring outer surface is coplanar with said plurality of detector side surfaces.

16. (Original) An imaging system as in claim 11 wherein said guard ring is coated on said plurality of detector side surfaces such that said guard ring is substantially coplanar with said plurality of detector side surfaces.

17. (Currently Amended) A method of improving the performance of peripheral pixel elements positioned on an anode surface of a direct conversion detector element, the direct conversion detector element having a cathode surface and a plurality of detector side surfaces, comprising:

applying a guard ring around said plurality of detector side surfaces, said guard ring applied coplanar to said peripheral pixel elements such that a ring outer surface of said guard ring is coplanar with said plurality of detector side surfaces.

18. (Original) A method as described in claim 17, further comprising:

applying a bias voltage to said guard ring.

19. (Original) A method as described in claim 17, further comprising:

adjusting a guard ring height of said guard ring to maximize the performance of the peripheral pixel elements.

20. (Original) A method as described in claim 17, further comprising:

adjusting a guard ring position along a detector depth to maximize the performance of the peripheral pixel elements.